

TABLA DE PRESION - TEMPERATURA

Condiciones de Saturación

Rojo = Pulg. Hg. Negro = Vapor (psig)

°C	°F	R-12	R-22	R-134a	R-502	R-507	R-410A
-45	-49.0	15.2	6.0	18.8	0.5	1.3	6.4
-44	-47.2	14.4	4.8	18.1	1.2	2.1	7.5
-43	-45.4	13.6	3.5	17.5	1.9	2.9	8.4
-42	-43.6	12.8	2.2	16.7	2.7	3.7	10.1
-41	-41.8	12.0	0.8	16.0	3.4	4.6	10.5
-40	-40.0	11.1	0.3	15.2	4.2	5.5	11.6
-39	-38.2	10.2	1.0	14.4	5.1	6.4	12.7
-38	-36.4	9.3	1.8	13.6	5.9	7.4	13.9
-37	-34.6	8.3	2.5	12.7	6.8	8.4	15.2
-36	-32.8	7.3	3.4	11.7	7.7	9.4	16.5
-35	-31.0	6.2	4.2	10.8	8.7	10.5	17.8
-34	-29.2	5.1	5.1	9.8	9.7	11.6	19.1
-33	-27.4	4.0	6.0	8.7	10.7	12.7	20.6
-32	-25.6	2.8	6.9	7.6	11.7	13.9	22.0
-31	-23.8	1.6	7.9	6.5	12.8	15.1	23.5
-30	-22.0	0.4	8.9	5.3	13.9	16.3	25.1
-29	-20.2	0.4	9.9	4.1	15.1	17.7	26.7
-28	-18.4	1.1	11.0	2.8	16.3	19.1	28.4
-27	-16.6	1.8	12.1	1.5	17.5	20.5	30.1
-26	-14.8	2.5	13.2	0.1	18.8	21.9	31.8
-25	-13.0	3.2	14.4	0.6	20.1	23.3	33.7
-24	-11.2	3.9	15.6	1.4	21.5	24.8	35.5
-23	-9.4	4.7	16.8	2.1	22.9	26.3	37.5
-22	-7.6	5.5	18.1	2.9	24.3	27.9	39.5
-21	-5.8	6.3	19.4	3.7	25.8	29.5	41.5
-20	-4.0	7.2	20.8	4.5	27.3	31.3	43.7
-19	-2.2	8.0	22.2	5.4	28.9	33.0	45.8
-18	-0.4	8.9	23.7	6.3	30.5	34.8	48.1
-17	1.4	9.9	25.2	7.2	32.2	36.6	50.4
-16	3.2	10.8	26.7	8.1	33.9	38.5	52.8
-15	5.0	11.8	28.3	9.1	35.7	40.4	55.2
-14	6.8	12.8	29.9	10.1	37.5	42.4	57.7
-13	8.6	13.8	31.6	11.2	39.4	44.5	60.3
-12	10.4	14.9	33.3	12.3	41.3	46.7	62.9
-11	12.2	16.0	35.0	13.4	43.2	48.8	65.7
-10	14.0	17.1	36.8	14.5	45.3	51.0	68.5
-9	15.8	18.3	38.7	15.7	47.3	53.3	71.3
-8	17.6	19.4	40.6	16.9	49.5	55.6	74.3
-7	19.4	20.6	42.6	18.2	51.6	58.0	77.3
-6	21.2	21.9	44.6	19.4	53.9	60.4	80.4
-5	23.0	23.2	46.6	20.8	56.2	62.9	83.6
-4	24.8	24.5	48.7	22.1	58.5	65.5	86.9
-3	26.6	25.8	50.9	23.5	60.9	68.1	90.2
-2	28.4	27.2	53.1	25.0	63.4	70.9	93.7
-1	30.2	28.6	55.4	26.5	65.9	73.6	97.2
0	32.0	30.1	57.7	28.0	68.5	76.4	100.8
1	33.8	31.6	60.1	29.6	71.1	79.3	104.5
2	35.6	33.1	62.5	31.2	73.8	82.3	108.3
3	37.4	34.7	65.0	32.8	76.6	85.2	112.2
4	39.2	36.3	67.6	34.5	79.4	88.4	116.2
5	41.0	37.9	70.2	36.3	82.3	91.6	120.3
6	42.8	39.6	72.9	38.1	85.2	94.8	124.5
7	44.6	41.3	75.6	39.9	88.2	98.1	128.8
8	46.4	43.1	78.4	41.8	91.3	101.5	133.1
9	48.2	44.9	81.3	43.7	94.4	105.0	137.6
10	50.0	46.7	84.2	45.7	97.6	108.6	142.2
11	51.8	48.6	87.2	47.7	100.9	112.2	146.9
12	53.6	50.6	90.3	49.8	104.2	115.8	151.7
13	55.4	52.5	93.4	52.0	107.6	119.8	156.6
14	57.2	54.5	96.6	54.2	111.1	123.5	161.6
15	59.0	56.6	99.9	56.4	114.6	127.6	166.7
16	60.8	58.7	103.3	58.7	118.2	131.5	172.0
17	62.6	60.9	106.7	61.1	121.9	135.7	177.3
18	64.4	63.1	110.2	63.5	125.7	139.9	182.8
19	66.2	65.3	113.7	65.9	129.5	144.3	188.4
20	68.0	67.6	117.4	68.5	133.4	148.6	194.1
21	69.8	69.9	121.1	71.1	137.3	153.1	199.9
22	71.6	72.3	124.9	73.7	141.4	157.6	205.8
23	73.4	74.8	128.7	76.4	145.6	162.4	211.9
24	75.2	77.3	132.7	79.2	149.8	167.0	218.1
25	77.0	79.8	136.7	82.0	154.0	172.0	224.4
26	78.8	82.4	140.8	84.9	158.3	176.9	230.9
27	80.6	85.0	145.0	87.9	162.8	182.0	237.5
28	82.4	87.7	149.2	90.9	167.3	187.2	244.2
29	84.2	90.5	153.5	94.0	172.0	192.4	251.1
30	86.0	93.3	158.0	97.2	176.6	197.8	258.0
31	87.8	96.2	162.5	100.4	181.4	203.3	265.2
32	89.6	99.1	167.2	103.7	186.3	209.0	272.4
33	91.4	102.1	172.0	107.1	191.3	214.6	279.8
34	93.2	105.1	176.8	110.5	196.2	220.4	287.4
35	95.0	108.2	181.5	114.0	201.4	226.4	295.1
36	96.8	111.3	186.6	117.6	206.6	232.4	302.9
37	98.6	114.6	191.7	121.3	211.9	238.7	310.9
38	100.4	117.8	196.8	125.0	217.2	244.9	319.0
39	102.2	121.2	202.0	128.8	222.7	251.3	327.3
40	104.0	124.6	207.4	132.8	228.4	257.8	335.7
41	105.8	128.0	212.9	136.7	234.0	264.5	344.3
42	107.6	131.5	218.4	140.8	239.8	271.3	353.1
43	109.4	135.1	224.0	145.0	245.6	278.3	362.0
44	111.2	138.8	229.8	149.2	251.7	285.4	371.0
45	113.0	142.5	235.6	153.4	257.8	292.6	380.2
46	114.8	146.3	241.7	157.9	263.9	299.9	389.6
47	116.6	150.1	247.7	162.4	270.3	307.4	399.2
48	118.4	154.0	253.9	166.9	276.7	315.0	408.9
49	120.2	158.0	260.2	171.5	283.2	322.8	418.8
50	122.0	162.0	266.7	176.3	289.7	330.8	428.8
51	123.8	166.2	273.1	181.1	296.6	338.8	439.0
52	125.6	170.4	279.7	186.2	303.4	347.0	449.4
53	127.4	174.6	286.5	191.1	310.3	355.4	460.0
54	129.2	178.9	293.4	196.3	317.4	364.0	470.7
55	131.0	183.3	300.3	201.6	324.7	372.7	481.6
56	132.8	187.8	307.4	206.8	331.9	381.5	492.7
57	134.6	192.4	314.5	212.3	339.5	390.5	504.0
58	136.4	197.1	321.9	217.8	347.0	399.8	515.5
59	138.2	201.7	329.3	223.3	354.7	409.2	527.1
60	140.0	206.5	337.0	229.1	362.5	418.7	539.0
61	141.8	211.3	344.7	234.9	370.5	428.5	551.0
62	143.6	216.2	352.5	240.9	378.6	438.4	563.2
63	145.4	221.3	360.5	247.0	386.9	448.6	575.6
64	147.2	226.4	368.5	253.0	395.3	458.9	588.2
65	149.0	231.6	376.8	259.3	403.7	469.3	600.9
66	150.8	236.8	385.2	265.7	412.4	480.0	613.9
67	152.6	242.2	393.6	272.2	421.3	490.9	627.1
68	154.4	247.5	402.1	278.9	430.3	502.1	640.5
69	156.2	253.0	411.0	285.5	439.4	513.4	654.1
70	158.0	258.7	419.8	292.3	448.7	525.0	667.8

Valores al nivel del mar, agregar 0.5 psig por cada 300 m de altura.

MEDICION DEL SOBRECALENTAMIENTO DE OPERACION

1. Determine la presión de succión con un manómetro preciso a la salida del evaporador. En instalaciones compactas, la presión de succión se puede leer en la conexión de succión del compresor.
2. De la tabla de Presión-Temperatura para refrigerantes, determine la temperatura de saturación correspondiente a la presión de succión.
3. Mida la temperatura del gas de succión en la ubicación del bulbo remoto.
4. Reste la temperatura de saturación leída en la tabla en el paso No. 2 de la temperatura medida en el paso No. 3. La diferencia es el sobrecalentamiento del gas de succión.

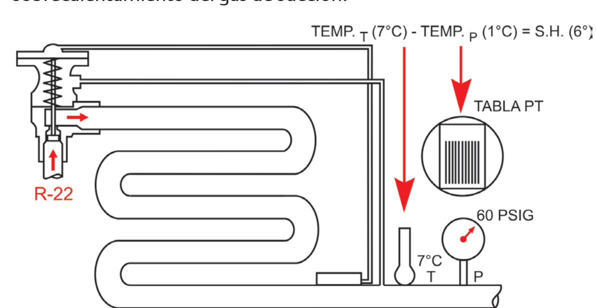




TABLA DE PRESION - TEMPERATURA

Condiciones de Saturación

Rojo = Pulg. Hg. Negro = Vapor (psig)

°C	°F	R-401A (MP39)		R-402A (HP80)		R-404A (HP62)		R-407C	
		Burbuja	Rocío	Burbuja	Rocío	Burbuja	Rocío	Burbuja	Rocío
-45	-49.0	*13.1*	*18.0*	2.9	1.4	1.2	0.6	*2.0*	*10.6*
-44	-47.2	*12.2*	*17.3*	3.7	2.2	1.9	1.3	*0.7*	*9.6*
-43	-45.4	*11.3*	*16.6*	4.6	3.0	2.7	2.1	0.4	*8.5*
-42	-43.6	*10.4*	*15.9*	5.5	3.8	3.5	2.9	1.1	*7.3*
-41	-41.8	*9.4*	*15.1*	6.4	4.7	4.4	3.7	1.9	*6.2*
-40	-40.0	*8.4*	*14.3*	7.3	5.6	5.3	4.6	2.6	*4.9*
-39	-38.2	*7.3*	*13.5*	8.3	6.6	6.2	5.5	3.4	*3.6*
-38	-36.4	*6.3*	*12.6*	9.3	7.5	7.1	6.4	4.3	*2.3*
-37	-34.6	*5.1*	*11.7*	10.4	8.5	8.1	7.3	5.2	*0.9*
-36	-32.8	*3.9*	*10.8*	11.5	9.6	9.1	8.3	6.1	0.3
-35	-31.0	*2.7*	*9.8*	12.6	10.7	10.1	9.4	7.0	1.0
-34	-29.2	*1.4*	*8.8*	13.7	11.8	11.2	10.4	8.0	1.8
-33	-27.4	*0.1*	*7.7*	14.9	12.9	12.3	11.5	9.0	2.6
-32	-25.6	0.6	*6.6*	16.1	14.1	13.4	12.6	10.0	3.4
-31	-23.8	1.3	*5.5*	17.4	15.3	14.6	13.8	11.1	4.3
-30	-22.0	2.0	*4.3*	18.7	16.6	15.8	15.0	12.2	5.2
-29	-20.2	2.8	*3.0*	20.1	17.9	17.1	16.2	13.3	6.1
-28	-18.4	3.5	*1.8*	21.5	19.2	18.4	17.5	14.5	7.0
-27	-16.6	4.3	*0.4*	22.9	20.6	19.7	18.8	15.7	8.0
-26	-14.8	5.1	0.5	24.4	22.1	21.1	20.2	17.0	9.1
-25	-13.0	6.0	1.2	25.9	23.5	22.5	21.6	18.3	10.1
-24	-11.2	6.9	1.9	27.5	25.0	23.9	23.0	19.6	11.2
-23	-9.4	7.8	2.6	29.1	26.6	25.5	24.5	21.0	12.4
-22	-7.6	8.7	3.4	30.7	28.2	27.0	26.0	22.5	13.5
-21	-5.8	9.7	4.2	32.4	29.9	28.6	27.6	23.9	14.7
-20	-4.0	10.6	5.0	34.2	31.6	30.2	29.3	25.5	16.0
-19	-2.2	11.7	5.9	36.0	33.3	31.9	30.9	27.0	17.3
-18	-0.4	12.7	6.8	37.9	35.1	33.7	32.6	28.6	18.6
-17	1.4	13.8	7.7	39.8	37.0	35.4	34.4	30.3	20.0
-16	3.2	14.9	8.7	41.7	38.9	37.3	36.2	32.0	21.4
-15	5.0	16.1	9.6	43.7	40.9	39.2	38.1	33.7	22.9
-14	6.8	17.3	10.6	45.8	42.9	41.1	40.0	35.5	24.4
-13	8.6	18.5	11.7	47.9	45.0	43.1	42.0	37.4	26.0
-12	10.4	19.8	12.7	50.1	47.1	45.1	44.0	39.3	27.6
-11	12.2	21.0	13.8	52.3	49.3	47.2	46.1	41.3	29.2
-10	14.0	22.4	15.0	54.6	51.5	49.4	48.2	43.3	30.9
-9	15.8	23.7	16.2	57.0	53.8	51.6	50.4	45.3	32.7
-8	17.6	25.1	17.4	59.4	56.2	53.8	52.6	47.5	34.5
-7	19.4	26.6	18.6	61.8	58.6	56.2	54.9	49.7	36.3
-6	21.2	28.1	19.9	64.4	61.0	58.5	57.3	51.9	38.3
-5	23.0	29.6	21.2	67.0	63.6	61.0	59.7	54.2	40.2
-4	24.8	31.2	22.6	69.6	66.2	63.5	62.2	56.5	42.2
-3	26.6	32.7	24.0	72.3	68.9	66.0	64.7	59.0	44.3
-2	28.4	34.4	25.4	75.1	71.6	68.7	67.4	61.4	46.5
-1	30.2	36.1	26.9	78.0	74.4	71.4	70.0	64.0	48.7
0	32.0	37.8	28.4	80.9	77.3	74.1	72.8	66.6	50.9
1	33.8	39.6	29.9	83.9	80.2	77.0	75.6	69.3	53.2
2	35.6	41.4	31.5	87.0	83.2	79.9	78.4	72.0	55.6
3	37.4	43.3	33.2	90.1	86.3	82.8	81.4	74.8	58.1
4	39.2	45.2	34.9	93.3	89.5	85.8	84.4	77.7	60.6
5	41.0	47.2	36.6	96.6	92.7	88.9	87.5	80.6	63.2
6	42.8	49.2	38.4	100.0	96.0	92.1	90.6	83.7	65.8
7	44.6	51.2	40.2	103.4	99.4	95.4	93.8	86.7	68.5
8	46.4	53.3	42.1	106.9	102.8	98.7	97.1	89.9	71.3
9	48.2	55.5	44.0	110.5	106.4	102.1	100.5	93.1	74.2
10	50.0	57.7	46.0	114.1	110.0	105.5	103.9	96.4	77.1
11	51.8	60.0	48.0	117.9	113.7	109.1	107.5	99.8	80.1
12	53.6	62.3	50.0	121.7	117.4	112.7	111.1	103.3	83.2
13	55.4	64.6	52.2	125.6	121.3	116.4	114.8	106.8	86.3
14	57.2	67.1	54.3	129.6	125.2	120.2	118.5	110.4	89.5
15	59.0	69.5	56.6	133.7	129.3	124.1	122.4	114.1	92.8
16	60.8	72.1	58.8	137.9	133.4	128.0	126.3	117.9	96.2
17	62.6	74.6	61.2	142.1	137.6	132.1	130.3	121.7	99.7
18	64.4	77.3	63.6	146.4	141.8	136.1	134.4	125.7	103.2
19	66.2	80.0	66.0	150.8	146.3	140.3	138.6	129.7	106.9
20	68.0	82.8	68.5	155.4	150.6	144.7	142.8	133.8	110.6
21	69.8	85.6	71.1	159.9	155.3	149.1	147.2	138.0	114.4
22	71.6	88.5	73.7	164.7	159.9	153.5	151.7	142.2	118.3
23	73.4	91.4	76.4	169.5	164.7	158.0	156.2	146.6	122.3
24	75.2	94.4	79.1	174.3	169.5	162.7	160.8	151.1	126.4
25	77.0	97.5	81.9	179.4	174.4	167.5	165.6	155.7	130.5
26	78.8	100.6	84.8	184.4	179.5	172.3	170.4	160.4	134.8
27	80.6	103.8	87.7	189.7	184.6	177.2	175.3	165.0	139.2
28	82.4	107.1	90.7	194.9	190.0	182.3	180.4	169.8	143.7
29	84.2	110.4	93.8	200.2	195.3	187.5	185.5	174.7	148.2
30	86.0	113.8	96.9	205.8	200.7	192.7	190.7	179.8	152.8
31	87.8	117.3	100.1	211.4	206.2	197.9	196.0	184.9	157.6
32	89.6	120.8	103.4	217.1	212.0	203.4	201.4	190.1	162.5
33	91.4	124.4	106.8	222.9	217.7	209.0	206.9	195.5	167.5
34	93.2	128.1	110.2	228.8	223.6	214.6	212.6	200.8	172.5
35	95.0	131.8	113.7	234.8	229.5	220.4	218.4	206.3	177.6
36	96.8	135.7	117.2	240.9	235.6	226.2	224.2	212.0	183.0
37	98.6	139.6	120.9	247.2	241.9	232.2	230.1	217.8	188.4
38	100.4	143.5	124.6	253.5	248.3	238.2	236.2	223.6	193.9
39	102.2	147.6	128.4	260.0	254.8	244.5	242.5	229.5	199.5
40	104.0	151.7	132.2	266.5	261.3	250.7	248.7	235.6	205.3
41	105.8	155.9	136.1	273.3	268.0	257.2	255.1	241.7	211.1
42	107.6	160.2	140.2	280.2	274.8	263.8	261.6	248.0	217.1
43	109.4	164.6	144.3	287.1	281.8	270.3	268.3	254.3	223.3
44	111.2	168.92	148.47	294.1	288.9	277.1	275.1	260.9	229.4
45	113.0	173.4	152.7	301.3	296.0	284.1	281.9	267.4	235.8
46	114.8	178.1	157.0	308.6	303.4	291.0	289.0	274.2	242.3
47	116.6	182.7	161.5	316.0	310.8	298.2	296.1	281.0	249.0
48	118.4	187.5	166.0	323.7	318.3	305.4	303.4	288.0	255.7
49	120.2	192.4	170.7	331.4	326.0	312.8	310.8	295.1	262.5
50	122.0	197.3	175.4	339.2	334.0	320.3	318.3	302.2	269.6
51	123.8	202.3	180.2	347.0	342.0	327.9	326.0	309.6	276.7
52	125.6	207.5	185.0	355.2	350.1	335.7	333.8	317.0	283.9
53	127.4	212.6	190.1	363.4	358.2	343.5	341.7	324.5	291.3
54	129.2	217.9	195.2	371.7	366.6	351.7	349.8	332.2	298.9
55	131.0	223.3	200.2	380.2	375.2	359.8	357.9	340.1	306.7
56	132.8	228.8	205.6	388.8	383.9	368.1	366.3	347.9	314.5
57	134.6	234.3	210.8	397.6	392.7	376.5	374.7	356.0	322.5
58	136.4	240.0	216.3	406.5	401.7	385.0	383.4	364.3	330.6
59	138.2	245.8	221.9	415.6	410.8	393.7	392.1	372.6	338.9
60	140.0	251.6	227.7	424.8	420.0	402.6	401.1	381.0	347.5
61	141.8	257.5	233.3	434.2	429.4	411.6	410.1	389.5	356.0
62	143.6	263.6	239.3	443.6	439.0	420.7	419.3	398.2	364.7
63	145.4	269.7	245.2	453.3	448.8	430.0	428.7	407.1	373.7
64	147.2	276.0	251.3	463.1	458.7	439.4	438.1	416.1	382.7
65	149.0	282.3	257.5	473.1	468.7	449.0	447.8	425.2	392.0
66	150.8	288.7	263.8	483.1	478.9	460.0	455.0	434.5	401.4
67	152.6	295.2	270.2	493.4	489.3	---	---	443.9	411.0
68	154.4	301.9	276.7	---	---	---	---	453.5	420.7
69	156.2	308.7	283.4	---	---	---	---	463.2	430.7
70	158.0	315.6	290.0	---	---	---	---	473.1	440.7

Valores al nivel del mar, agregar 0.5 psig por cada 300 m de altura.
Para determinar el sobrecalentamiento use los valores de “Vapor”.
Para determinar el subenfriamiento use los valores de “Líquido”.

AJUSTE DEL SOBRECALENTAMIENTO DE LAS TXV

Familia de Válvulas	Total de Vueltas	Grados de SC por vuelta					
		R-22		R-134a	R-404A / 507		R-410A
		+20 F	-20 F	+20 F	+20 F	-20 F	+40 F
TCLE	32	0.8	1.5	1.0	0.5	1.0	N/A
HF	10	2.2	4.2	3.8	1.8	3.2	N/A
A	8	3.0	5.0	4.5	2.0	4.0	2.0
TRAE	10	2.2	4.2	3.8	1.8	3.2	N/A

Para regresar aproximadamente al ajuste original de fábrica, gire el vástago de ajuste en el sentido contrario del reloj hasta que el resorte esté completamente descargado (que llegue al tope o hasta que suene la “matraca”). Entonces, gírelo de regreso a la mitad del “Total de Vueltas” mostradas en la tabla.